TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE RENO, NEVADA SOIL CONSERVATION SERVICE

JUNE 1993

AGRONOMY TECHNICAL NOTE NO. NV-71

SUBJECT: CPA - ESTIMATING GROSS EROSION FROM FIELD MEASUREMENT OF RILL EROSION IN TONS/ACRE

The attached Idaho Technical Note Agronomy No. 8 is useful in planning areas with slopes that are steep enough to have rill erosion.

Larry W. Goodson
for

Jim W. Doughty
State Resource Conservationist

Technical Notes

USDA-Soil Conservation Service
Boise, Idaho

AGRONOMY TECH NOTE NO. 8 (Rev. 2) June 1992

Prepared by Floyd G. Bailey, State Conservation Agronomist. The information in this Technical Note was taken from West Technical Service Center's Agronomy Technical Note No. 25, and updated with new technical research data furnished by Dr. D. K. McCool, SEA-AR.

ESTIMATING GROSS EROSION FROM FIELD MEASUREMENT OF RILL EROSION IN TONS/ACRE

The method explained below for measuring rill erosion is known as the Alutin Rill Erosion Method. This procedure can be used to measure rill erosion up to rates of 100 tons per acre. Losses greater than 100 tons per acre are considered ephemeral gully erosion or concentrated flow erosion and should not be measured using this method.

Tons/acre soil loss from rill erosion = a sum of cross section of rills in square inches along a measured lineal distance of 12.5 feet across the slope or multiples thereof.

Step 1 - Measure a lineal distance of 37.5 or 75.0 feet across a slope.

Step 2 - Measure in inches, the width and depth of each rill along the chosen distance.

Step 3 - Multiply each width and depth reading to obtain a product in square inches.

Step 4 - Add all products of readings along chosen distance.

Step 5 - Divide this sum by 3 if a 37.5 foot distance was selected, and by 6 if 75.0 feet was chosen. The result is tons of soil loss per acre from rill erosion.

Example

Station	Width (in.)	x Depth (in.)	= Area in sq. in. along a distance of 37.5 feet
1	3	3	9
2	2	3	6
3	3	6	18
4	4	6	24
5	3	5	15
6	5	6	30
			102

For the chosen distance of 37.5 feet, the soil loss from rill erosion in tons/acre = 102/3 = 34.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

ID-180-011
5/92

FIELD MEASUREMENT OF RILL EROSION IN TONS/AC.
(Alutin Method)

Field Office _____ SCD _____

Cooperator's Name _____ Location _____

Field Number _____ Percent Slope and Length _____ Soil Series _____

Transect Station	Rill Width	Rill Depth	Square Inches	Transect Station	Rill Width	Rill Depth	Square Inches

Total Square Inches _____ Total Square Inches _____
Soil Loss Total Tons _____ Soil Loss Total Tons _____

INSTRUCTIONS

The method explained below for measuring rill erosion in tons per acre is known as the Alutin Rill Erosion Method. This procedure measures soil losses up to 100 tons per acre. Losses greater than 100 tons per acre are usually beyond the realm of rilling and are considered to be concentrated flow or ephemeral gully erosion.

The basic formula used in this calculation is:

T/Acre soil loss - summ of cross section of rills in square inches along a measured lineal distance of 13.7 feet across the slope or multiples thereof.

Procedure:

Step 1 - Measure a lineal distance of 37.5 or 75.0 feet across the slope.

Step 2 - Measure in inches, the width and depth of each rill along the chosen distance.

Step 3 - Multiply each width and depth reading to obtain a product in square inches.

Step 4 - Add all products of readings along chosen distance.

Step 5 - Divide this sum by 3 if a 37.5 foot distance was selected and by 6 if 75.0 feet were chosen. The result if tons of soil per acre.

Example:

Width (in.)	Depth (in.)	= Area in square inches
3	3	9
2	3	6
3	6	18
4	6	24
3	5	15
5	6	30
	Total	102

Answer:

For a chosen distance of 37.5 feet, the soil loss in tons/acre - 102/3 = 34 tons.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

ID-180-011
5/9:

FIELD MEASUREMENT OF RILL EROSION IN TONS/AC.
(Alutin Method)

Field Office _____ SCD _____

Cooperator's Name _____ Location _____

Field Number _____ Percent Slope and Length _____ Soil Series _____

Transect Station	Rill Width	Rill Depth	Square Inches	Transect Station	Rill Width	Rill Depth	Square Inches

Total Square Inches _____ Total Square Inches _____
Soil Loss Total Tons _____ Soil Loss Total Tons _____